

# Green Codes and Standards Are Impacting Landscape Irrigation



Brent Mecham, Industry Development Director  
April 26, 2012

Green codes, standards or voluntary programs are changing the marketplace with the stated desire or outcome to create more sustainable buildings and building sites. Most of these initiatives are providing criteria that will affect the amount of resources needed to build and maintain a structure and the building site. Specifically, a lot of attention is directed toward criteria that will reduce energy and water use over the life of the building. There are more than 10 different green codes, standards and voluntary programs that are now in place and being adopted by governmental agencies or being used by builders and developers that have provisions that impact landscapes and irrigation. Some of them are now finalized and have been recently published while others are in the process of being updated and modified and will likely be released later in 2012.

Codes that are adopted by a “jurisdiction having authority” become mandatory and the provisions must be followed, i.e., plumbing or electrical codes. Standards, on the other hand, are documents that have been created by a group of interested stakeholders to describe a method, process or test that can be voluntarily complied with, unless someone makes it mandatory. Frequently, codes will refer to standards. Voluntary programs are those that exist and can be used by designers, engineers and contractors to achieve a desired outcome without mandatory compliance.

Examples of voluntary programs include LEED, Green Building Initiative, EPA WaterSense for New Homes and Sustainable Sites Initiative. Codes and standards that are mandatory once adopted by a local jurisdiction include the International Green Construction Code (IgCC) created by the International Code Council, the Green Plumbing and Mechanical Code Supplement (GPMCS) by the International Association of Plumbing and Mechanical Officials, the National Green Building Standard (NGBS or ICC 700) by the National Home Builder Association for residential properties and the Standard for Design of High-Performance Green Buildings (ASHRAE 189.1) by the American Society of Heating, Refrigeration and Air Conditioning Engineers. Additionally, there are state created green building codes like CALGreen used by California and several programs aimed at federal buildings and facilities.

While each standard or code has unique provisions, they all have similarities impacting what plant materials are used in the landscape. If an irrigation system is installed, a list of requirements needs to be implemented.

The common landscape requirements are to design and install landscapes that will require less water and reduced maintenance over time. Almost all of them encourage the use of native or adapted plants that are not invasive. A few requirements include specific provisions to limit the turfgrass footprint or offer incentives to limit the turfgrass area. Many have provisions to use a water budget approach to determine the landscape design; a few have language about soil protection and soil amendment for landscaping.

The common requirements for the irrigation system include:

1. Competent and qualified people to design and install the irrigation system.
2. A reduction or elimination of potable water (including freshwater sources like lakes, streams or groundwater) for irrigating the landscape. Instead, the direction is to use alternate water sources such as rainwater harvesting, gray water and reclaimed water for irrigation purposes.
3. The use of weather-based or soil moisture-based controllers.
4. Metering of all water sources.
5. Hydrozoning.
6. No overspray or runoff.
7. The use of drip/microirrigation.
8. Specific and prescriptive language about the components used in the irrigation system.

While the model codes and standards have been created, they can be modified by the local jurisdiction having authority. Many states or large municipalities who have staff with expertise in the many areas covered by the codes will most likely modify them to fit local circumstances, but smaller entities who lack the staff or expertise may adopt them as they are written. There exists an opportunity for the industry to have a voice in adopting the codes for local use. Two excellent references to use when working with local councils and officials are the Irrigation Association's *Turf and Landscape Irrigation Best Management Practices*, available at [www.irrigation.org/uploadedFiles/Resources/BMP\\_Revised\\_12-2010.pdf](http://www.irrigation.org/uploadedFiles/Resources/BMP_Revised_12-2010.pdf) and the premier reference book *Irrigation, Sixth Edition*, available at [www.irrigation.org/sixthedition](http://www.irrigation.org/sixthedition). [These references](#) will provide the expertise needed to help modify codes that will work well for local circumstances.

**Compiled by Brent Mecham, Irrigation Association, April 2012.** brentmecham@irrigation.org 703.536.7080  
 Accuracy is not guaranteed, but represents a comparison among existing codes, standards and volunteer green programs



Landscape and Irrigation Criteria in Green Initiatives

	LEED 2012	GBI 2010	EPA W/S 2010	SITES 2009	FEMP 2009	EO 13514 2009	IGCC 2012	IAPMO 2012	CalGreen 2010	MWEL0 AB 1881	ASHRAE 189.1	NGBS 2012
<b>Landscape Requirements</b>												
Landscape Design		X		X	X	X			X	X		
Water budget for design	X		X	X	X	X			X	X		option
Reduce potable water use		X	X	50% min	X	X	50%	75% (v)	50% (v)		65%	
Reduce use of all water sources	X			X			X				X	
Soil amendment/protection				X	X	X	X		X	X		
Native Plants		X	X	X	X	X	75%		X		X	
Adapted Plants		X	X	X	X	X					X	
Turfgrass limitation					X				50-75%		40% (max)	option
Establishment period	X			X							X	
<b>Irrigation Requirements</b>												
Qualified/Certified Professional			X		X	X	X	X				X
Designer					X	X	X	X				X
Installer			X		X	X	X	X				X
Auditor			X		X	X				X		
Plan/Design required		X		?		X			X	X		
Follow IA T/L BMPs				X	X							X
Water Sources available												
Potable/freshwater sources	limited	X	X	limited	reduce	reduce	reduce	reduce	reduce		reduce	X
Alternate water sources	X	X		X	X	X	X	X	X		X	X
Water meter required	X	X		X			X	X	X		X	
Minimum square footage							ALL	2500	1000		25000	
Flow Sensor/Monitor				X	X							
Water Budget for management					X				X	X		

	LEED 2012	GBI 2010	EPA W/S 2010	SITES 2009	FEMP 2009	EO 13514 2009	IGCC 2012	IAPMO 2012	CalGreen 2010	MWEL0 AB 1881	ASHRAE 189.1	NGBS 2012
<b>Irrigation System Criteria</b>												
Smart controllers	X		X		X		X	X	X	X	X	X
Backflow prevention							X	X			X	
Rain sensor (and others)			X		X		X	X		X		
Soil moisture sensor					X			X				
Hydrozones			X		X		X	X	X	X	X	
Matched Precipitation Rate							X	X		X		
Pop-up sprinklers 4" minimum			X				X	X				
Pressure regulation								X		X		
MSMT nozzles												X
Maximum precipitation rate								1.0 in/h	X			
Narrow area (feet)							4 ft	4 ft		8 ft		
No runoff							X	X		X		
No overspray on hard surfaces					X		X	X	X	X	X	
No line drainage					X			X		X		
Slope Maximum PR			micro				.50 in/h	0.75 in/h		0.75 in/h		
Minimum DULQ			0.65				0.65					
Minumum efficiency										71%		
Drip irrigaton			X		X	X	X	X	X			X
Inspected/verification	X	X	X	X			X	X	X	X	X	X
Commissioned system											X	
Mandatory irrigation audit			X		X					X		
NO IRRIGATION SYSTEM	X		X	X								X
Possible Points	2	15										25

(v) = voluntary compliance, but not required. IAPMO is "designed" to use alternate water sources.

**Notes:**

LEED 2012 (April draft), not yet finalized, Point-based rating system, Voluntary program

GBI Green Building Initiative, Green Globes Point-based rating system, Voluntary Program

EPA WaterSense for New Homes program.Landscape and irrigation requirements for labeling a new home. Voluntary Program.

SITES, Sustainable Site Initiative patterned after LEED with prerequisites and credits. It is being updated for 2012 Voluntary Program.

FEMP Federal Energy Management Program with published BMPs for landscaping and irrigation intended to be used on Federal facilities.

EO 13514 Presidential Executive Order to reduce energy and water use in Federal Buildings. Compliance guidelines have been published

IGCC International Green Construction Code by ICC, an overlay to plumbing and mechanical codes, Uses ASHRAE 189.1 as an alternate compliance path.

IAPMO International Association of Plumbing and Mechanical Officials has published a Green Supplement to plumbing and mechanical codes.

CALGreen is the Green Code used in California that covers residential and non-residential properties

MWEL0 is California's Model Water Efficient Landscape Ordinance that is referenced in CALGreen and each city has a version that is at least as restrictive.

ASHRAE 189.1 Standard for the Design of High-Performance Green Buildings (Except Low-Rise Residential) Standard written in code language.

NGBS National Green Building Standard (aka ICC 700) by National Home Builders Association written as a point-based standard/code for residential properties.

Ultimately, the Authority Having Jurisdiction can include or modify requirements in model codes and standards used as codes.